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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/26/2001

Setsuo Kobayashi

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12/14/2004

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EXAMINER

RUDE, TIMOTHY L

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/889,788

Applicant(s)

KOBAYASHI ET AL.

Examiner

Timothy L Rude

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

Claims 1, 7, and 14 are amended.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 1, 7, and 14, the recitations pertaining to selection through a method of measuring AC residual image which comprises: a first step of stabilize a display panel; a second step of measuring a brightness ... and a fifth step of obtaining a value of the AC residual image by the following formula is considered indefinite because it

~~3119~~ 0-13-04 is not a proper product-by-process claim and it therefore ^{is} ~~has~~ indefinite as to what is actually claimed. Please consider that the recitations pertain to selection of a structural component of a device by testing the completed device. Obviously one cannot select a component for inclusion within the device after the device is built. Furthermore, the criterion for the structural limitation derived from the method steps is considered met by the prior art applied in the Non Final Rejection mailed 12 March 2004 since they teach a display with less than 8% AC residual image.

As to claims 2-6, 8-13, and 15-20, they are directly or indirectly dependent upon base claims rejected above.

For examination purposes, the method step limitations will be considered met by prior art having an AC residual image of less than 8% as applied in the Non Final Rejection mailed 12 March 2004.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

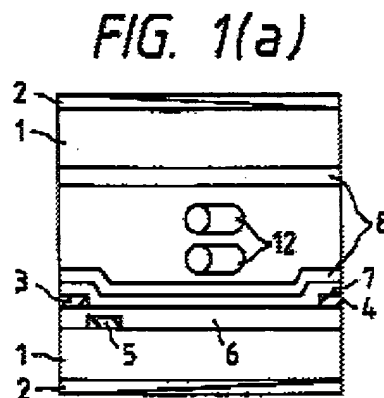
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 7-9, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohe et al (Ohe '464) USPAT 5,600,464 in view of Ota et al (Ota) USPAT 5,831,707.

As to claims 1, 7, 9, and 14-15, Ohe '464 discloses in Figures 1-6, a liquid crystal display device comprising a pair of substrates and a liquid crystal layer held between the pair of substrates (Summary of the Invention, col. 1, line 45 through col. 3, line 63), at least one of the pair of substrates being provided with plural electrodes, 3 & 4, for applying a lateral electric field to the liquid crystal layer (col. 1, lines 56 and 57); an

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insulating film, 7 (Applicant's protection films), wherein the film thickness of the protecting film is in the range of 0.4 μm to 2 μm (col. 3, lines 32-35), and oriented films, 8, free from side chain structure (see chemical formula, col. 9, lines 22-24, and Ohe does *not* teach the use of side chain type structure; Ohe is evidence that alignment films free from side chain structure were in common use at the time the claimed invention was made), formed on both of the pair of substrates (col. 1, lines 58-62); wherein "residual image is substantially eliminated" (col. 1, lines 46-50) to the point where "no visible residual image was observed at all" (col. 9, lines 40-45) (Applicant's method of confirming an AC residual image of the oriented films is less than 8%).

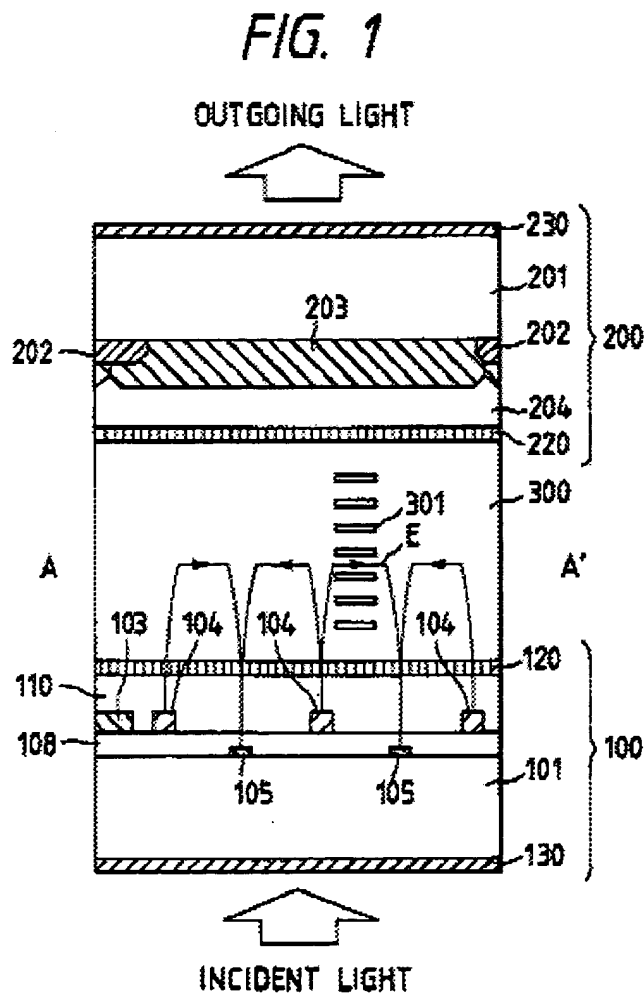


The invention of Ohe '464 deals primarily with the improved insulating and alignment layers to reduce residual image, and the values of Ohe '464 overlap the claimed ranges.

Ohe '464 does not explicitly disclose that the residual image which is substantially eliminated (Applicant's less than 8%) occurs even in a case of driving by pure AC.

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Ota teaches that in an in-plane switch LCD the use of AC driving (Applicant's driving by pure AC) reduces the residual image relative direct current operation (col. 9, lines 54-65) to achieve a display having preferable quality. Note that Ota confirms the AC residual image would be less than the unspecified (AC or DC) residual image that has already been made virtually zero by Ohe '464, therefore the combination meets Applicant's claimed range of less than 8%.



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Ota is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add driving by pure AC to achieve a display having preferable quality.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Ohe '464 with the driving by pure AC of Ota to achieve a display having preferable quality.

As to claims 2, 8, and 16, Ohe '464 discloses (col. 2, lines 60-63) the use of a specific resistance of the liquid crystal layer of 1×10^9 to $8 \times 10^{15} \Omega \cdot \text{cm}$ (overlaps Applicant's $10^{10} \Omega \cdot \text{cm}$ or more, establishes *prima facie* obviousness). Optimization of a results effective variable requires only ordinary skill in the art.

3. Claims 3, 10, and 17, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohe '464 in view of Ota, as applied to claims above, and further in view of Mishina et al (Mishina) USPAT 5,350,539.

As to claims 3, 10, and 17, Ohe '464 in view of Ota discloses the liquid crystal display device according to claims 1, 7, and 15.

Ohe '464 in view of Ota does not explicitly disclose a device wherein at least one of the oriented films is an organic polymer containing at least one of a polymer and an oligomer in which a weight substance with a long-chain alkyl group applied to an amine

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component or an acid sentence is at least 5% and at most 30% of the total molar amount.

Mishina teaches the use of at least 10 mol % (overlaps Applicant's 5% and at most 30%) of an alkyl group (col. 2, line 44 through col. 3, line 23) to provide low temperature heat treatment and stable alignment properties (col. 1, lines 5-9). Mishina also teaches that the alkyl group may be a long-chain alkyl group in order to raise the tilt angle (col. 5, lines 23-25).

Mishina is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add 5% ~ 30% long-chain alkyl group to raise the tilt angle while providing low temperature heat treatment and stable alignment properties.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Ohe '464 in view of Ota with the add 5% ~ 30% long-chain alkyl group of Mishina to raise the tilt angle while providing low temperature heat treatment and stable alignment properties.

4. Claims 4, 5, 6, 11-13, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohe '464 and Ota in view of Mishina as applied to claim 3 above, and further in view of Yu et al (Yu) USPAT 6,066,696.

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As to claims 4, 5, 6, 11-13, and 18-20, Ohe '464 and Ota in view of Mishina disclose the liquid crystal display device according to claims 1, 3, 7, 10, 15, and 17.

Ohe '464 and Ota in view of Mishina do not explicitly disclose a device, wherein a weight average molecular weight of the polymer and the oligomer is at least 2,000, and at most 30,000.

Yu teaches the use of 1% to 20% (by weight, col. 5, lines 14-21) of a polyimide having an alkyl group at both ends (Applicant's terminal type) (col. 2, lines 32-60) with a molecular weight of 5×10^3 to 5×10^5 (col. 5, lines 21-28) (overlaps Applicant's 2,000 and at most 30,000) for improved optical alignment and thermal stability (col. 5, lines 19-21).

Yu is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a polyimide having an alkyl group with a molecular weight of 2,000 and at most 30,000 for improved optical alignment and thermal stability.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Ohe '464 and Ota in view of Mishina with a polyimide having an alkyl group with a molecular weight of 2,000 and at most 30,000 of Yu for improved optical alignment and thermal stability.

Response to Arguments

5. Applicant's arguments filed on 28 September 2004 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

The new limitations are not described or suggested by the cited prior art.

Examiner's responses to Applicant's ONLY arguments are as follows:

It is respectfully pointed out that the criterion for the structural limitation derived from the method steps is considered met by the prior art applied in the Non Final Rejection mailed 12 March 2004 since they teach a display with less than 8% AC residual image.

Please note that examiner has found no allowable subject matter in the instant Application to support device claims. However, a continuation application may present method claims for future consideration. Examiner presently has no opinion as to allowable subject matter to support method claims, as they have not been considered.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude
Examiner
Art Unit 2883



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